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AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,

(54) **Title:** FRAMEWORK FOR DYNAMIC BROKERAGE AND MANAGEMENT OF TOPICS AND DATA AT THE SERVICE LAYER

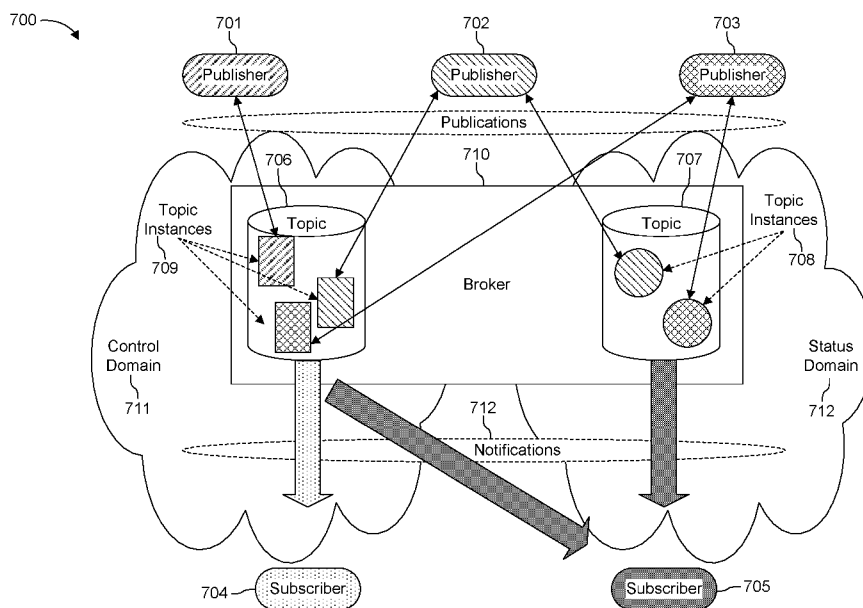


Fig. 7

(57) **Abstract:** Methods and apparatuses are described herein for a framework for data brokerage services in a service layer. A first apparatus may receive, from a second apparatus, a first signal comprising first information indicating a publishing intent associated with a topic indicator. The first apparatus may receive, from a third apparatus, a second signal comprising second information indicating a subscription intent associated with the topic indicator. The first apparatus may generate, based on the publishing intent and the subscription request, a topic instance. The first apparatus may send a third signal comprising an announcement message indicating the generated topic instance. The first apparatus may receive, from the third apparatus, a fourth signal comprising a subscription request for the generated topic instance. The first apparatus may send, to the third apparatus, at least one fifth signal comprising notifications and publish instances associated with the generated topic instance.

DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER INV. H04L29/08 H04W4/70 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) H04L H04W		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KOSTER SMARTTHINGS A KERANEN J JIMENEZ ERICSSON M: "Publish-Subscribe Broker for the Constrained Application Protocol (CoAP); draft-ietf-core-coap-pubsub-00.txt", PUBLISH-SUBSCRIBE BROKER FOR THE CONSTRAINED APPLICATION PROTOCOL (COAP); DRAFT-IETF-CORE-COAP-PUBSUB-00.TXT, INTERNET ENGINEERING TASK FORCE, IETF; STANDARDWORKINGDRAFT, INTERNET SOCIETY (ISOC) 4, RUE DES FALAISES CH- 1205 GENEVA, SWITZERLAND, 21 October 2016 (2016-10-21), pages 1-22, XP015115909,	1,5,6, 10,14, 18,19,30
Y	the whole document ----- -/--	8,14
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.		
<input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents :		
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed		"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
Date of the actual completion of the international search <p style="text-align: center;">11 March 2020</p>		Date of mailing of the international search report <p style="text-align: center;">23/06/2020</p>
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer <p style="text-align: center;">Lázaro, Marisa</p>

INTERNATIONAL SEARCH REPORT

International application No PCT/US2019/063279

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2018/112327 A1 (CONVIDA WIRELESS LLC [US]) 21 June 2018 (2018-06-21) paragraph [0039] - paragraph [0040] paragraph [0045] - paragraph [0046] paragraph [0091] - paragraph [0093] paragraph [0094] - paragraph [0096] paragraph [0115] - paragraph [0120] paragraph [0100] paragraph [0164] - paragraph [0166] -----	1-25, 30
Y	US 2018/183862 A1 (HUH EUI NAM [KR] ET AL) 28 June 2018 (2018-06-28) paragraph [0011] paragraph [0040] - paragraph [0044] paragraph [0063] - paragraph [0069] paragraph [0057] paragraph [0083] paragraph [0089] - paragraph [0095] -----	8, 14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2019/063279

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-25, 30

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-25, 30

Method and apparatus for brokering the subscription and creation of topics

2. claims: 26-29

Apparatus for managing long-standing discovery requests

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2019/063279

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2018112327	A1	21-06-2018	NONE

US 2018183862	A1	28-06-2018	KR 20180073154 A 02-07-2018
			US 2018183862 A1 28-06-2018
